

From which may be derived this *approximate* scale for interpreting the photographic magnitudes given for plate 1728.

Mag. ...	...	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.2	11.9	12.2	12.6	13.0
Oxford diameter		35	33	29	24	20	15	13	11	9	7	6	5	4

*Estimations of Magnitude.*

March 25, 7<sup>h</sup>. This evening being brilliantly fine, I watched for and noted the time of the first appearance to the eye of some stars of similar magnitude near the *Nova*. At 7<sup>h</sup> 24<sup>m</sup> G.M.T. saw  $\nu$  (3.9 mag.); 7<sup>h</sup> 28<sup>m</sup>  $\iota$  appeared (4.2); 7<sup>h</sup> 31<sup>m</sup> Hagen No. 26 and 27 (5.3 and 5.1) were seen, probably as combined light; 7<sup>h</sup> 32<sup>m</sup> *Nova* was seen;  $l$  (5.1) appeared some minutes before *Nova*. At 8<sup>h</sup> *Nova* estimated as  $\frac{1}{2}$  magnitude fainter than  $l$ . Difference in colour would affect such observations.

March 26, 9<sup>h</sup>. Sky very clear, moonlight; *Nova* =  $\iota$  and  $\sigma$  *Persei* and  $\frac{1}{2}$  magnitude fainter than  $\kappa$ .

April 10. *Nova* intensely red (crimson).

University Observatory, Oxford:  
1901 May 9.

*Further Observations of the New Star in Perseus (3).*  
By A. Stanley Williams.

The following paper contains a further list of observations of the brightness of *Nova Persei* in the same form as the last one. As, however, the faintness of the star soon rendered greater optical aid necessary, a column has been added to indicate the instrument used. In this Op. signifies opera glass,  $\frac{3}{4}$  in. the  $\frac{3}{4}$ -inch finder attached to a  $2\frac{3}{4}$ -inch refractor, and  $2\frac{3}{4}$  in. the latter instrument itself, with a power of 35. The observations were much hindered by cloud in the early part of April, but the latter half of the month fortunately proved very fine.

Date. 1901.	Greenwich M.T.	Observations.				Mag.	Inst.
	h m						
Apr. 12	9 35	$\kappa$ <i>Persei</i>	+ 5,	32 <i>Per.</i>	- 1,	36 <i>Per.</i>	- 5 4.7 Op.
13	10 20	$\kappa$ <i>Per.</i>	+ 2,	32 <i>Per.</i>	- 6,	36 <i>Per.</i>	- 8 4.35 „
14	8 30	$\kappa$ <i>Per.</i>	+ 12,	32 <i>Per.</i>	+ 5,	36 <i>Per.</i>	+ 1 5.35 „
	10 10	32 <i>Per.</i>	+ 4,	36 <i>Per.</i>	- 2		5.2 „
15	9 35	32 <i>Per.</i>	+ 6,	36 <i>Per.</i>	+ 1		5.45 „
	10 5	36 <i>Per.</i>	+ 2,	30 <i>Per.</i>	+ 1		5.55 „
17	9 45	32 <i>Per.</i>	+ 2,	36 <i>Per.</i>	- 3		5.05 „
19	9 45	32 <i>Per.</i>	+ 5,	30 <i>Per.</i>	- 1, = 36 <i>Per.</i>		5.35 „
20	9 40	32 <i>Per.</i>	+ 6,	30 <i>Per.</i>	+ 1, = 36 <i>Per.</i>		5.45 „
21	8 50	36 <i>Per.</i>	+ 3,	30 <i>Per.</i>	+ 2, = $a$		5.9 „
		36 <i>Per.</i>	+ 7, = $a$				6.3 $\frac{3}{4}$ in.
		36 <i>Per.</i>	+ 8, $a$ + 2 (see note)				6.25 $2\frac{3}{4}$ in.
	10 0	36 <i>Per.</i>	+ 2,	30 <i>Per.</i>	+ 2, $a$ - 2		5.8 Op.

May 1901.

of the New Star in Perseus.

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Date. 1901.	Greenwich M.T. h m		Observations.	Mag. Inst.
Apr. 22	9 15	36 Per.	+ 5, $a - 1$	6.15 $\frac{3}{4}$ in.
		36 Per.	+ 7, $a - 3$	6.15 $2\frac{3}{4}$ in.
	9 40	36 Per.	+ 1, $a - 3$	5.85 Op.
	10 30	= 36 Per.	30 Per. $- 1$	5.35 "
	23 8 38	$\kappa$ Per.	+ 1, $\nu$ Per. + 5	4.3 "
		$\kappa$ Per.	+ 2, $\nu$ Per. + 6, 32 Per. $- 10$	4.2 "
	8 55	$\kappa$ Per.	+ 1, $\nu$ Per. + 5, 32 Per. $- 8$	4.2 "
	9 9	$\kappa$ Per.	+ 1, $\nu$ Per. + 4	4.2 "
	9 36	$\kappa$ Per.	+ 1, $\nu$ Per. + 4, 32 Per. $- 8$	4.15 "
	10 6	$\kappa$ Per.	+ 1, $\nu$ Per. + 6	4.3 "
24	10 28	$\kappa$ Per.	+ 1, $\nu$ Per. + 4	4.2 "
	9 15	36 Per.	+ 7, $a - 7$	5.95 $2\frac{3}{4}$ in.
		36 Per.	+ 6, $a - 4$	6.05 $\frac{3}{4}$ in.
	9 25	36 Per.	+ 7, $a - 2.7$	6.2 $2\frac{3}{4}$ in.
	9 8	36 Per.	+ 8, $a - 3$	6.2 "
	9 0	= 36 Per.	$a - 10$	5.45 "
	May 2 8 50	About 1 mag. brighter than 36 Per.		4.4 $\pm$ "
		36 Per.	+ 1.5, $a - 9.5$	5.55 "
	8 45	36 Per.	+ 9, $a - 2$	6.3 "
	8 36	36 Per.	+ 8, $a - 3$	6.2 "
6	8 35	36 Per.	+ 10, $a - 1$	6.4 "

## Notes.

April 12, a little hazy but no cloud. April 13, slight mistiness may just possibly have affected the estimates. April 14, very clear. April 15, very clear. April 17, hazy. April 19, a little hazy towards horizon, otherwise clear. April 20, very clear, *Nova* just steadily visible in opera glass. April 21, exceedingly clear. A note to the last estimate made the same night runs, "I feel *sure* this should be  $a - 2$ ," instead of  $a + 2$ . April 22, very clear. April 23, very clear except at commencement and end of the series, when slightly hazy. April 24, hazy. April 25, clear. The observations as given are the means of three separate sets of comparisons between 9<sup>h</sup> 10<sup>m</sup> and 9<sup>h</sup> 25<sup>m</sup>. April 26, very clear, but some cloud about. Three sets of comparisons between 9<sup>h</sup> 0<sup>m</sup> and 9<sup>h</sup> 18<sup>m</sup>. April 28, clear night. Good observations from many repeated comparisons. May 2, hazy and sky very bright, so impossible to make a satisfactory estimate. The star was invisible in the opera glass, and owing to a counterpoise coming in contact with one of the legs of the stand, it could not be followed long enough to make comparison with brighter stars, such as  $\kappa$  and  $\nu$  Persei. The brightness of the *Nova* on this night is, however, certain. It was incomparably brighter than the star  $a$ , and a whole magnitude brighter than 36 Persei. May 3, very clear. Mean of two sets of comparisons between 8<sup>h</sup> 40<sup>m</sup> and 8<sup>h</sup> 50<sup>m</sup>. May 4, hazy, but observations fairly satisfactory. May 5, clear. Mean of four sets of comparisons between 8<sup>h</sup> 30<sup>m</sup> and 8<sup>h</sup> 43<sup>m</sup>. May 6, very clear. Mean of three sets of comparisons between 8<sup>h</sup> 30<sup>m</sup> and 8<sup>h</sup> 41<sup>m</sup>.

The comparison star designated  $\alpha$  in the above observations is the 6.5 magnitude star B.D. +44° 734. It will be seen that there have been some further remarkable fluctuations in the brightness of *Nova Persei*, and of a type apparently differing somewhat from that of the changes which occurred in March. In that month the normal condition of the star as seen here seems to have been bright, with well marked and rather accentuated minima at intervals of three or four days. But in April–May the star has appeared normally faint, with at intervals well marked and accentuated maxima. The observations show that the star was unusually bright on April 13, 17, 23, and 28, and on May 2. The maxima of April 23 and May 2 are specially remarkable. On the former of these two dates the star appeared nearly two whole magnitudes brighter than it had been the previous night. So striking was the change that observations were repeated at intervals to see if the star was still varying. There was no certain change, however, in the interval of 1<sup>h</sup> 50<sup>m</sup> over which the observations extended, although by the following night the star had sunk again to 6.0 mag. On May 2 the rise seems to have been nearly as great as it was on April 23. The conditions were very unfavourable on this night, but I feel sure, notwithstanding, that the *Nova* was a full magnitude brighter than *36 Persei*, or about 4.4 mag. It is easy to trace a rough periodicity in the above dates of maxima, but observations from the other hemisphere seem necessary for the satisfactory discussion of such a question.

The observations made with different instruments at the same time on one or two nights, April 21 in particular, present some rather curious differences, and it would seem that the opera-glass is not a suitable instrument for noting slight differences of brightness in stars nearly at the limit of visibility. Under such conditions the value of a step seems to be markedly greater with the opera-glass than it is with either the  $\frac{3}{4}$ -inch or  $2\frac{3}{4}$ -inch telescopes, and the estimates correspondingly rougher.

The following observations of the colour of the *Nova* were made with p. 75 on the  $2\frac{3}{4}$ -inch refractor. April 12, fairly deep reddish at 9<sup>h</sup> 35<sup>m</sup>, but at 9<sup>h</sup> 55<sup>m</sup> white without any decided red tinge. April 15, flaming red, a very bright intense red colour. April 19, very intensely red (crimson). April 20, crimson, pretty deep in flashes, though not quite as intense as on the previous night. April 21, reddish, not at all deep or marked. April 22, reddish, not at all deep or marked. April 23, white or slightly yellowish, with pale reddish flashes. The red colour not at all marked and not *nearly* so deep as it was a few nights earlier. At times, indeed, there seemed to be distinct bluish flashes. April 24, very deep intense red. April 26, very red.

The almost complete absence of red colour on April 23 is rather remarkable, since the star was then at a maximum of brightness. On April 24 the *Nova* had fallen to the 6th mag. and

had again become intensely red. This would seem to indicate a connection between the variations of brightness and colour. However, it should be noted that both on April 21 and 22, when the star was faint, the red colour was not at all deep or marked.

*Hove*: 1900 May 8.

### *Light Curve of Nova Persei, 1901.* By Laurence Child.

(Communicated by Rev. Edmund Ledger.)

The curve (plate 13) is the mean of 527 observations. I have obtained the data from observations made by Miss Orr and myself, together with those published in the *Ast. Nach.* and the *Bulletin de la Soc. de France*. The only day without observations is April 24, so that the magnitude of the maximum on that day is only surmised.

The dates of maxima and minima are as follows :—

Minima.		Maxima.	
March	19	March	20
	22 Very red		23
	25 Red		27 Orange
	28 Red	April	1 Orange
April	2 Red		4
	7 Red		9
	11 Red		14
	15 Red		19 Orange
	21 Red		24
	25 Very red		27

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### *Further Observations of Nova Persei.* By M. C. Sharp.

The following list of estimated magnitudes is rather short, cloudy weather and pressure of other occupations having somewhat curtailed opportunities :

April 12	...	...	4.7	April 20 (10 <sup>h</sup> 40 <sup>m</sup> )	5.6
,, 13	...	...	4.4	,, 21 ...	5.7
,, 14	...	...	5.3	,, 22 (8 <sup>h</sup> 48 <sup>m</sup> ) ...	5.5
,, 15	...	...	5.6	,, , (10 <sup>h</sup> 15 <sup>m</sup> )	5.2
,, 18	...	...	4.1	,, 25 ...	6.0
,, 19	...	...	5.4	May 3 ...	5.8
,, 20 (9 <sup>h</sup> 45 <sup>m</sup> )	...	...	5.8	,, 4 ...	6.6(?)